

Remarks

Applicant has carefully reviewed and considered the Examiner's Action mailed June 26, 2006. Reconsideration is respectfully requested in view of the foregoing amendments and the comments set forth below.

By this Amendment, claims 2-3, 8, 10, and 16-17 are amended, claims 1, 4-7 and 13-15 are canceled and new claims 18-26 are presented. New claims 18-20 depend from method claim 17 and find support in original claims 15, 8, and 9, respectively. New claims 21-26 depend from claims 17, 16, and 10 and find support at page 3, lines 8-12 of the originally-filed application. Accordingly, claims 2-3, 8-12, and 16-26 (18 total claims) are pending in the present application.

Claims 1-17 were rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0001450 to He et al. (hereinafter referred to as "He") as explained in the paragraphs spanning pages 2-5 of the Action. This rejection is respectfully traversed.

He is directed to monitoring and control of an adaptive filter in a communication system. In rejecting the original claims, the Examiner relied on the following paragraphs in He et al.:

Paragraph 0027, which recites the elements in Fig. 2 (echo canceller 20) and describes their interconnections.

Paragraphs 0042-0049, which describe the general functions of the elements in Fig. 2 of He, simply disclose a Sin 37 (or inputted signal) that is transmitted from transmitter 12 via hybrid 16, and an echo canceller 20 that provides an echo cancelled send signal Sout 42 to receiver 14, and a Rin 43 that is a receive signal received from

transmitter/receiver 14 via hybrid 18 and communications network 24. Echo canceller 20 of He is disclosed as eliminating or reducing the reflected echo that may have been introduced into Sin 37 and provides an echo cancelled send signal Sout 42. Adaptive filter 28 of He attempts to “imitate” the hybrid response of Sin 37 and subtracts it out from send signal Sin 39. These paragraphs do not disclose “generating a predicted echo signal from a received signal by multiplying samples of the received signal by respective tap coefficients and adaptively updating the tap coefficients” as required in independent claims 8, 10, 16 and 17 of the present application.

Paragraphs 0093-0099 of He describe an anti-howling scheme that is illustrated in Figs. 6 and 14 of He where the stability of the system 10 and adaptive filter 28 is controlled. If system 10 is unstable, howling may result. That is, He may disclose an anti-howling circuit; but He fails to disclose the recited first envelope detector, second envelope detector and a decision circuit for comparing the first and second envelope and of independent claim 8.

Further, paragraphs 0174-0188 of He describe a scheme that uses the logarithm of the above ratio of the power of the error signal to the power of the send signal to measure echo return loss enhancement, in relation to pure delay estimation and detection of tone signals. These paragraphs do not appear to have any bearing on the detection of howling, let alone the claimed “echo loss calculator for calculating echo attenuation on an echo path from the received signal to the outgoing signal” and the recited “decision circuit for comparing the first envelope with the second envelope wherein the decision unit detects howling when the second envelope exceeds the first envelope by a threshold ration that depends on the calculated echo attenuation on the echo path”, as set forth in claim 8 of

the present application.

That is, independent claim 8 recites a circuit that detects howling when the envelope of the residual signal exceeds the envelope of the outgoing signal by a threshold ratio that depends on the echo attenuation on the echo path, as in the fifth and sixth embodiments of the present application, for example. He (paragraphs 0093-0099 and Figs. 6 and 14) teaches a circuit that detects howling when the power of the residual signal exceeds the power of the outgoing signal by a pair of fixed threshold ratios. There is no suggestion that the threshold ratio should vary depending on the echo attenuation on the echo path. Advantages of varying the threshold ratio according to the echo attenuation are discussed in the present specification from page 17, line 21, to page 18, line 17.

Independent claims 10 and 16 recite a circuit and method that detect howling by comparing the envelope of the residual signal with the envelope of the received signal, as in the third and fourth embodiments of the present application, for example. He teaches only a method that compares the power of error signal 46 with the power of the send signal S_{in} 38 or an outgoing signal. See paragraphs [0094] through [0099] of He. Thus, He fails to disclose comparing a received signal (e.g., R_{in}) with a residual signal as claimed by Applicant. Thus, He fails to disclose each and every feature of these independent claims. Consequently, He cannot anticipate the claimed invention. Furthermore, advantages of using the received signal instead of the outgoing signal are summarized in the present specification on page 15, lines 23-25. Thus, it is submitted that it would not be obvious to modify He to obtain the claimed invention.

Independent claim 17 recites a method of detecting howling that detects echo

attenuation on the echo path and makes the condition for detecting howling more stringent as the detected echo attenuation increases, as in the fifth and sixth embodiments of the present application, for example. This claim should be allowable over He for the same reason as independent claim 8: He teaches a detection condition that remains fixed regardless of any change in the echo attenuation on the echo path.

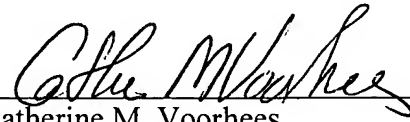
Each of the dependent claims are patentable at least for the reasons argued above with respect to the independent claims from which they depend and for the features recited in each dependent claim. In the He fails to disclose each and every feature of the claimed invention, He cannot anticipate claims 2-3, 8-12, and 16-26. Withdrawal of the rejection under 35 U.S.C. § 102(e) is respectfully requested.

In view of the foregoing amendments and remarks, it is respectfully requested that the rejections of record be withdrawn and that a Notice of Allowance be issued indicating that claims 2-3, 8-12, and 16-26 are allowed over the prior art of record.

Should the Examiner believe that a conference would advance the prosecution of this application, the Examiner is encouraged to telephone the undersigned counsel to arrange such a conference.

Respectfully submitted,

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Catherine M. Voorhees
Registration No. 33,074
VENABLE LLP
P.O. Box 34385
Washington, D.C. 20043-9998
Telephone: (202) 344-4000
Telefax: (202) 344-8300

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